

REMARKS

This amendment is filed in response to the final Office Action dated March 31, 2006. In view of these amendment and remarks, this amendment should be entered, the application allowed, and the case passed to issue. No new matter or considerations are introduced by this amendment. The amendment to claims 1 and 8 are supported by originally filed claims 2 and 4. Support for the amendment to claim 6 is found in originally filed claim 6. No new considerations are introduced because claims 1, 2, 4, 6, and 8 have all been previously considered.

Claims 1 and 5-8 are pending in this application. Claims 1, 2, and 4-8 are rejected. Claims 1, 6, and 8 have been amended in this response. Claims 2 and 4 have been canceled in this response. Claim 3 was previously canceled.

Information Disclosure Statement

The Office Action did not include an initialed copy of the PTO-1449 form which accompanied the Information Disclosure Statement filed February 12, 2004. **Applicants again respectfully request the Examiner consider the references cited therein and include a properly initialed copy of the PTO-1449 form with the next official action.**

Claim Rejections Under 35 U. S. C. § 103

Claims 1, 2, 4, 5, and 8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Neipert et al. (U.S. Pat. No. 2,913,332) in view of Tokumoto (U.S. Pat. No. 2,935,454). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

An aspect of the present invention, per claim 1, is a molten salt bath for electroforming containing lithium bromide, cesium bromide, and a halide of an alkali metal and/or a halide of an alkaline-earth metal. The sum of a mole fraction of the lithium bromide and a mole fraction of

the cesium bromide is set to be within a range from at least 0.5 to less than 0.95 with respect to the entire molten salt bath for electroforming. A mole ratio of the lithium bromide to the cesium bromide (lithium bromide/cesium bromide) is set to be within a range from at least 1.8 to at most 2.5. The halide of the alkali metal is potassium bromide.

Another aspect of the invention, per claim 8, is a molten salt bath for electroforming obtained by mixing lithium bromide, cesium bromide, and a halide of an alkali metal and/or a halide of an alkaline-earth metal. The sum of a mole fraction of the lithium bromide and a mole fraction of the cesium bromide is set to be within a range from at least 0.5 to less than 0.95 with respect to the entire molten salt bath for electroforming. A mole ratio of the lithium bromide to the cesium bromide (lithium bromide/cesium bromide) is set to be within a range from at least 1.8 to at most 2.5. The halide of the alkali metal is potassium bromide.

The Examiner asserted that Neipert et al. teach a molten salt bath containing lithium bromide, cesium bromide, and a halide of an alkali metal and/or a halide of an alkaline-earth metal.

The Examiner acknowledged that Neipert et al. do not teach the specific mole fraction sum of lithium bromide and cesium bromide to the entire bath nor the specific mole ratio of LiBr to CsBr. The Examiner asserted that Tokumoto teaches a molten salt bath for electrodepositing titanium. Although, Tokumoto teach a molten mixture comprising LiBr and KBr with a combined molar ratio of 76.5, the Examiner alleged that a skilled artisan would have expected a molten mixture comprising LiBr and CsBr to be chemically similar to a mixture of LiBr and KBr. The Examiner maintained that it would have been obvious to have selected the claimed molar ratio in order to deposit a metal with a smooth surface.

Neipert et al. and Tokumoto, whether taken alone, or in combination, however, do not suggest the claimed molten salt bath for electroforming because there is no suggestion in Neipert et al. or Tokumoto to provide a molten bath for electroforming comprising LiBr, KBr, and CsBr. Neipert et al. disclose dual molten salt baths comprising LiBr and KBr (or CsBr). Neipert et al. do not suggest a molten salt bath comprising LiBr and KBr and CsBr. Neipert et al. further disclose a ternary molten salt bath comprising LiBr, CsBr, and NaI. However, there is no suggestion in Neipert et al. to replace the NaI with KBr. Thus, Neipert et al. do not suggest Claimed Feature 1 of the instant invention, as shown in the Table below.

In claims 4 and 5 Neipert et al. disclose a molten salt bath consisting of a mixture of LiBr and KBr. Because this mixture is a dual molten salt bath the sum of the mole fractions of LiBr and KBr is necessarily 1. The sum of the mole fractions of LiBr and CsBr in the Neipert et al. dual molten salt bath (assuming CsBr is substituted for KBr as asserted by the Examiner) cannot be less than 1. Thus, Neipert et al. do not suggest the claimed sum of mole fractions (see Claimed Feature 2 in the Table below).

The Examiner asserted that Neipert et al. disclose CsBr can be substituted for KBr in a molten salt bath, however, there is no suggestion in Neipert et al. that CsBr can be added to a dual molten salt bath comprising KBr and LiBr. Even though Neipert et al. further disclose a ternary system consisting of LiBr, KBr, and NaI, there is no suggestion that KBr can be used instead of NaI in a ternary system.

Tokumoto does not cure the deficiencies of Neipert et al., as Tokumoto et al. disclose a hexadic molten salt bath containing LiBr, KBr, SrBr₂, BaBr₂, MgBr₂, and NaBr (see Ex. 1). Tokumoto does not suggest the formation of a ternary molten salt containing LiBr, KBr, and CsBr.

The characteristics of a molten salt bath can be changed considerably by substituting one salt for another, adding an additional salt, or changing the ratios of the constituents. Therefore, the combination of Tokumoto and Neipert et al. do not suggest the claimed molten salt bath, as shown in the Table below.

	Claims 1 and 8	Neipert et al.	Tokumoto
Claimed Feature 1	LiBr+CsBr+KBr	LiBr+KBr (or CsBr) (column 6, lines 39-48) or LiBr+CsBr+NaI (column 2, line 44)	LiBr+KBr+SrBr ₂ + BaBr ₂ +MgBr ₂ +NaBr (Example 1)
Claimed Feature 2	Sum of a mole fraction of LiBr and CsBr (with respect to entire molten salt bath) = 0.5 to < 0.95	Sum of a mole fraction of LiBr and KBr (with respect to entire molten salt bath) = 1 (column 6, lines 46-48)	Sum of a mole fraction of LiBr and KBr (with respect to entire molten salt bath) = 0.765 (Example 1)

Claims 6 and 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Westfall (U.S. Pat. No. 5,215,631) in view of Uriu et al. (U.S. Pat. No. 5,647,966) and Neipert et al.¹ This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

The Examiner asserted that Westfall teaches an electrolytic method of depositing metal using molten salt eutectic mixtures. The Examiner acknowledged that Westfall does not teach the claimed bath composition and resist pattern. The Examiner relied on the teaching of Uriu et al. of precipitating a metal from an electrolytic bath on exposed portions of a conductive substrate to assert that it would have been obvious to modify the method of Westfall to

¹ The statement of the rejection does not include Neipert et al., however, it is apparent the Examiner intended to rely on Neipert et al., as the Examiner subsequently argues the applicability of Neipert et al. on page 6.

selectively deposit metal on an exposed area of a conductive substrate. The Examiner alleged that Neipert et al. disclose the molten salt bath composition.

Westfall, Uriu et al., and Neipert et al., whether taken alone, or in combination, however, do not suggest the claimed method because neither Westfall nor Uriu et al. cure the deficiencies of Neipert et al. Neither Westfall nor Uriu et al. suggest a molten salt bath comprising LiBr, KBr, and CsBr.

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge readily available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). There is no suggestion in Tokumoto to modify the molten salt bath of Neipert et al. to form the molten salt bath of claims 1 and 8. There is no suggestion in Westfall, or Uriu et al. to modify the molten salt bath of Neipert et al. to form the molten salt bath of claim 1.

The requisite motivation to support the ultimate legal conclusion of obviousness under 35 U.S.C. § 103 is not an abstract concept, but must stem from the applied prior art as a whole and realistically impel one having ordinary skill in the art to modify a specific reference in a specific manner to arrive at a specifically claimed invention. *In re Deuel*, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995); *In re Newell*, 891 F.2d 899, 13 USPQ2d 1248 (Fed. Cir. 1989). Accordingly, the Examiner is charged with the initial burden of identifying a source in the applied prior art for the requisite realistic motivation. *Smiths Industries Medical System v. Vital Signs, Inc.*, 183 F.3d 1347, 51 USPQ2d 1415 (Fed. Cir. 1999); *In re Mayne*, 104 F.3d 1339, 41

USPQ2d 1449 (Fed. Cir. 1997). There is no motivation in Tokumoto to modify the molten salt bath of Neipert et al. to form the molten salt bath of claims 1 and 8. There is no motivation in Westfall, or Uriu et al. to modify the molten salt bath of Neipert et al. to form the molten salt bath of claim 1.

In rejecting a claim under 35 U.S.C. § 103, the Examiner is required to discharge the initial burden by, *inter alia*, making "**clear and particular**" factual findings as to a **specific understanding** or **specific technological principle** which would have **realistically** impelled one having ordinary skill in the art to modify an applied reference to arrive at the claimed invention based upon facts, -- not generalizations. *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 57 USPQ2d 1161 (Fed. Cir. 2000); *Ecolochem Inc. v. Southern California Edison, Co.*, 227 F.3d 1361, 56 USPQ2d 1065 (Fed. Cir. 2000); *In re Kotzab, supra*; *In re Dembiczak*, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999). That burden has not been discharged, as the Examiner has provided no factual basis for modifying the molten salt bath of Neipert et al. to form the molten salt bath of claims 1 and 8.

The instant claims are further distinguishable over the cited prior art, as none of the references suggest the improved metal deposition provided by molten salt baths according the claimed composition wherein a mole ratio of the lithium bromide to said cesium bromide (lithium bromide/cesium bromide) is set to be within a range from at least 1.8 to at most 2.5 (see page 12, lines 16-24 of the written description).

The only teaching of the claimed molten salt baths for electroforming and method of manufacturing a metal product is found in Applicants' disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20

USPQ2d 1438 (Fed. Cir. 1991). The Examiner's retrospective assessment of the claimed invention and use of unsupported conclusory statements are not legally sufficient to generate a case of *prima facie* obviousness. The motivation for modifying the prior art must come from the prior art and must be based on facts. The Examiner is not free to ignore the judicial requirement for **facts**. To do so is legal error. *In re Lee*, 277 F.3d 1338 (Fed. Cir. 2002).

The dependent claims are allowable for at least the same reasons as the independent claims from which they depend.

In view of the above amendments and remarks, Applicants submit that this amendment should be entered, the case allowed, and passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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